

Hobbies

WEEKLY

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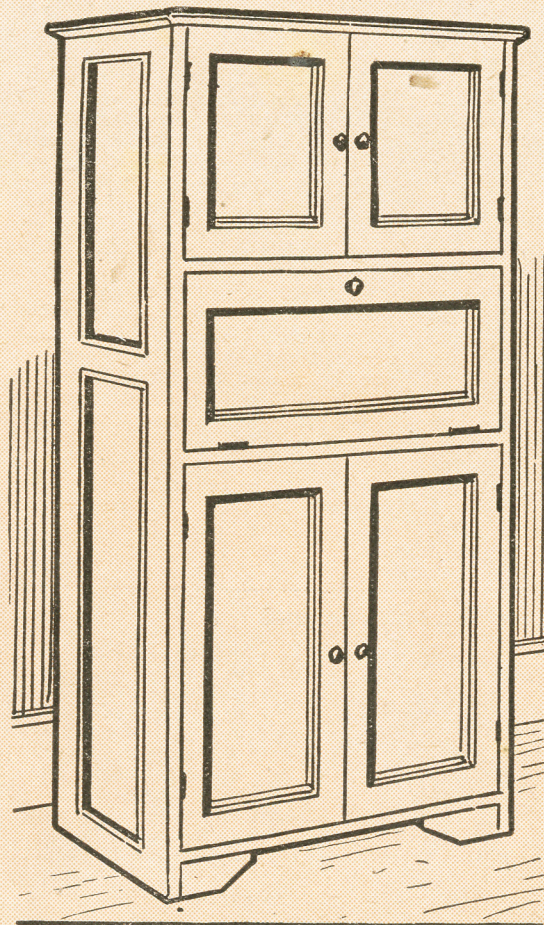
March 29th, 1950

Price Fourpence

Vol. 109 No. 2839

THE improved design of kitchen cabinet, now so popular, can well be made by the handy woodworker himself, if the necessary timber is available. There are no difficult joints to be dealt with in the example illustrated and the quantity of wood required has been cut to the minimum.

A KITCHEN CABINET



Another point worth mentioning, is the absence of the usual drawer, which lowers the height of the cabinet, making access to the upper cupboard easier, especially to the shorter woman.

In place of this drawer a pull-out tray has been substituted, placed in the lower cupboard and intended for cutlery or table linen. Where these articles are commonly kept in a dining room sideboard, the tray can be omitted.

The Framework

Fig. 1 shows a front elevation and a side section, from which dimensions can be taken. Construct the two side pieces first. These sides are framed up from $\frac{1}{2}$ in. by 2 in. wood for the uprights, and $\frac{3}{4}$ in. by 3 in. wood for the rails, except the centre one which can be 2 ins. wide. A shouldered mortise and tenon joint is used at top and bottom of these frames, as at (A) in Fig. 3, and an ordinary tenon for the centre rails, as shown.

Glue the frames to-

gether, and take some pains to get these square and out of winding. Readers who prefer dowelling can use that form of joint, if preferred. Plywood or a good quality substitute can be used for the panels. These can be fitted in grooves, where a ploughing plane is available, otherwise they are beaded in, as in detail (B).

The Sides

The frames, we can describe them more accurately as the sides now, are fitted together as follows. At the top, as at (C), in Fig. 3, a $\frac{3}{4}$ in. by 2 in. rail is lap dovetailed across at front and back.

The back rail is not quite level with the back edge of the sides but $\frac{1}{4}$ in. in, to leave room for the plywood back of the cabinet to fit in. In the inner corner right-angled wood blocks are glued and screwed, to square up the carcass.

Fig. 4 shows how the bottom and intermediate shelves are fitted across. The bottom is made up of two or more boards of $\frac{3}{4}$ in. or $\frac{1}{2}$ in. wood, glued together to make up the depth. It is then screwed to a 1 in. square fillet each side, the fillets themselves being screwed to the sides of the cabinet. Let these fillets be $1\frac{1}{2}$ ins. short of the front edge to leave room for the blocks glued left and right at the front of the cabinet, at the bottom. These are shown in Fig. 1.

The intermediate shelves, which form the top of the lower cupboard and the floor of the upper one respectively, are fitted in $\frac{1}{4}$ in. grooves cut in the sides, or slightly deeper grooves if the inner beads are thicker than $\frac{1}{4}$ in., so that the

end edges of the shelves butt against the panels.

Underneath each a $\frac{1}{4}$ in. by 1 in. slip of wood is glued across, both to the panel and shelves. These slips, of course, extending only to the width of the panels, not the framing. They are obviously necessary to support the centre of the shelves.

Shelving

The shelves are made up of similar wood to that employed for the bottom of the cabinet, and it will be necessary, on account of their width, to glue two or more boards together, edge to edge. Make a good glued joint here. It may be

that used already, and should be of such width that the panel comes level with the inside surface of the frame.

Swinging the Doors

Hinge the doors with 2 in. brass butt hinges, and 3 in. hinges for the fall front. A pair of metal stays must also be fitted for the latter to drop at right angles and remain firmly in that position. Cupboard catches and bolts should be fitted to the doors of the cupboards, with thin slips of wood glued inside to act as stops, preventing the doors closing too far in and putting strain on the hinges.

This fall front is not intended to act also as a pastry board, as it seems most

It should be about 2 ins. short of the inside depth of the cabinet, 4 ins. deep, and any required width.

At each side a $\frac{3}{4}$ in. square fillet of wood is glued and screwed across, level with the top edge, to form runners. Two pieces of wood are fitted together, the bottom ones being wider than the top, to allow space and support to the tray runners. These are screwed underneath the shelf, or top of the lower cupboard, at the right distance apart, to allow the tray to enter between and slide in and out freely, as at (F).

To the tray fit a convenient pull. The

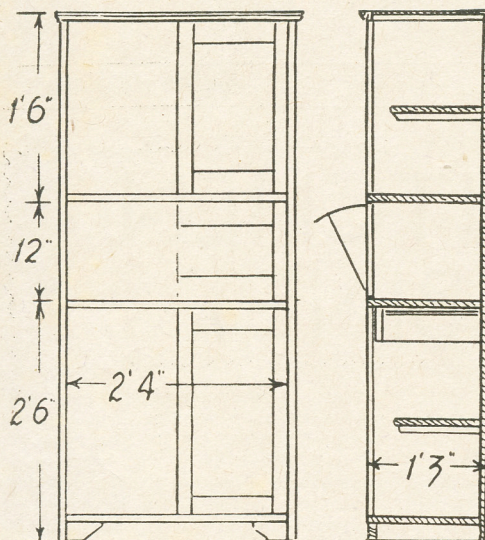


Fig. 1—Front and side elevation

added that the shelves, bottom and fillets, are all cut $\frac{1}{4}$ in. less than the full depth of the cabinet to leave room, as mentioned before, for the back.

Now cover the top of the cabinet with the plywood, nailing and gluing it down evenly all over, and cover the cut edges and sides and front, either with a small moulding to form a modest cornice, or just a strip of wood, planed to a bevelled edge, as in the detail, Fig. 3 (D).

The back of the cabinet, plywood again can be cut and neatly fitted in. In the inside vertical angles between the back and sides a triangular fillet may be glued along to keep out dust when the back fits there tightly. Cut two blocks of $\frac{3}{4}$ in. wood, 6 ins. long, to fit in the angles each side of the front, just under the bottom of the cabinet. This practically finishes the carcase.

The doors of the cabinet are framed up like the sides of $\frac{3}{4}$ in. by 2 in. for the uprights and $\frac{3}{4}$ in. by 3 in. for the rails. They are panelled like the rest. The full front, covering the middle space between the cupboards, is framed up similarly, but instead of plywood for the panel a slightly thicker stuff is employed, say, $\frac{1}{2}$ in. to $\frac{3}{4}$ in.

Plywood can also be used here if of the thickness recommended. A beading is nailed and glued in to support this, which should be of thicker wood than

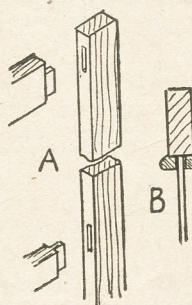


Fig. 2—Rail joints

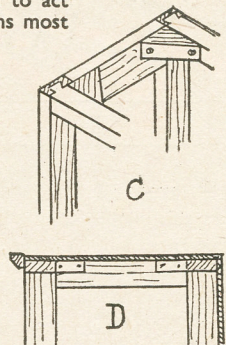


Fig. 3—The top of the cabinet

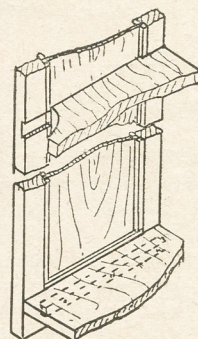


Fig. 4—Shelf fitting

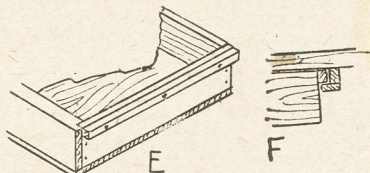


Fig. 5—The sliding tray portion

people much prefer to use the separate board, usually employed, on the kitchen table. It is more convenient and better lighted. Shelves can now be added to both cupboards, being laid upon wood fillets, screwed to the sides of the cabinet.

Pull-out Tray

The pull-out tray, mentioned already, can be made up as at (E) in Fig. 5. The sides are rebated into the front of the tray and the back nailed between. A bottom of plywood is glued and nailed on.

cabinet can be stained oak or walnut, and given two or three coats of clear copal varnish to finish, and should, if neatly made, make a useful and well looking piece of kitchen furniture. A cutting list of the wood required is added to assist readers when purchasing the materials.

In connection with this purchase of wood, it is essential you select the timber with care. Remember it should be seasoned, and of reasonable strength so you can "work" it satisfactorily and be sure it will not warp, or pull after the article has been completed. The Cabinet is likely to have a lifetime of wear and use; it will be most disappointing if it falls to pieces or pulls apart after a comparatively short life. Well made, it is a lasting and useful piece of furniture.

MATERIAL FOR FRAMING

Sides (4)	...	...	...	...	...	...	5ft. 0ins. by 2ins. by $\frac{3}{4}$ in.
Sides (4)	...	...	...	...	...	...	1ft. 3ins. by 3ins. by $\frac{3}{4}$ in.
Sides (2)	...	...	...	...	...	...	1ft. 3ins. by 2ins. by $\frac{3}{4}$ in.
Top cupboard (4)	...	...	...	...	...	...	1ft. 6ins. by 2ins. by $\frac{3}{4}$ in.
Top cupboard (4)	...	...	...	...	...	...	1ft. 2ins. by 3ins. by $\frac{3}{4}$ in.
Fall front (2)	...	...	...	...	...	...	1ft. 0ins. by 2ins. by $\frac{3}{4}$ in.
Fall front (2)	...	...	...	...	...	...	2ft. 4ins. by 3ins. by $\frac{3}{4}$ in.
Bottom cupboard (4)	...	...	...	...	...	...	2ft. 4ins. by 2ins. by $\frac{3}{4}$ in.
Bottom cupboard (4)	...	...	...	...	...	...	1ft. 2ins. by 3ins. by $\frac{3}{4}$ in.
Top rails (2)	...	...	...	...	...	...	2ft. 6ins. by 2ins. by $\frac{3}{4}$ in.
Plywood panels ($\frac{1}{2}$ in.)	1ft. 8ins. by 11ins. (2), 2ft. 8ins. by 11ins. (2), 1ft. 2ins. by 10ins. (2), 1ft. 10ins. by 10ins. (2), 5ft. 4ins. by 2ft. 4ins. (1).						
All of $\frac{1}{2}$ in. stuff. Panel 2ft. by 6ins. (1) of $\frac{3}{4}$ in. or $\frac{1}{2}$ in. 8ins. by $\frac{3}{4}$ in. or $\frac{1}{2}$ in. wood for bottom and shelves, 14ft. run.							
Extra wood for tray and small shelves as required.							

A practical piece of home carpentry to make is A STEP-LADDER CHAIR

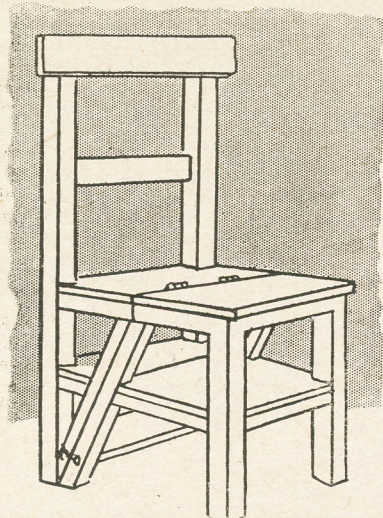


Fig. 1—A perfectly useful chair

A GOOD solid chair, capable of standing up to all kinds of rough wear is always an asset to the kitchen, and it is well-worth building for its ever-willing service. But with a few slight modifications when planning the original design, the chair may be made even more adaptable. There will no longer be any need to stand precariously on tip-toe to reach the top shelf of the cupboard.

In a matter of seconds the chair can be changed into a step-ladder which is strong enough to bear any member of the family with safety. There are no spare parts to be added or any elaborate adaptations. The change can be effected in an instant by an operation which is as simple as the opening of a cupboard door.

Start as a Chair

In building the dual purpose unit it is advisable to concentrate on the construction of the chair only, as it appears in Fig. 1. The more elaborate-looking structure of the step-ladder in Fig. 2 will emerge automatically when the chair is completed.

In principle it is nothing more than a simple, square-built chair, which is divided in two across the middle of the seat, with diagonal supports put in at the division, and two extra 'shelves' underneath which form the treads of the step-ladder. For this reason, as well as to simplify construction details, the actual measurements of each individual member are not shown.

All these can more easily be ascertained from actual measurements of any ordinary chair. The only departure from standard chair measurements is that the seat of the convertible chair is 16ins. in width, both back and

front, and it is squared-up instead of increasing in width at the front, as do most chairs.

The back legs (T), which are carried right through and fitted with back rests, are 36ins. long and 1½ins. square in section. The front legs (R) are of the same size squares and are 18ins. in height. All other members and cross-pieces, except the back rests (A) and (B), are cut 1½ins. wide and 1in. thick. (A) and (B) are cut from the same boards as the seat and lower 'shelves'.

The Steps

These may be ½in. to ¾in. thick, whichever is most easily obtainable. The sides of boxes or packing cases are particularly suitable for this purpose, and they should be cut to the details shown on Fig. 3. The corner squares, however, are best left until the finished measurements of the legs and other framing has been determined.

Begin assembling by joining pieces (C) and (H) by means of the two hinges (W) to form the seat. Cut away the corners of (C) to accommodate the square section of the back legs, and fix the seat temporarily into position by nailing through the legs into the edge of the board. Do not drive the nails right home, as they have to be removed later.

Fix the front legs in position with nails driven through the corners of the front half (H) into the top ends of the legs. Remember to allow an overlap of ½in. to the front edge of the seat. Fig. 1.

Skeleton Assembly

The assembly then represents the skeleton form of the chair, and by referring to Fig. 1, the size of the different supports and cross-pieces can be measured exactly, from the skeleton structure.

A straight edge from the hinged joint

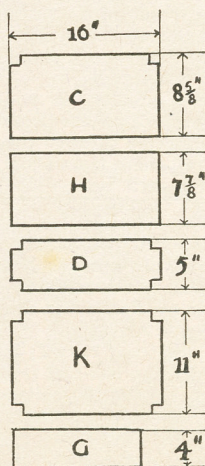


Fig. 3—Shelf shapes

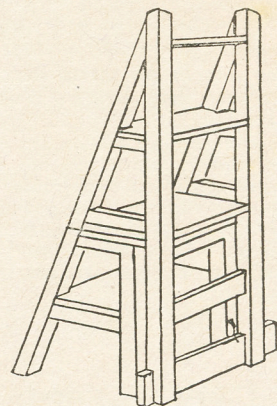


Fig. 2—The transfer into steps

of the seat to the extreme end of the back legs will determine the length and angles of the diagonal supports (S). These should be cut and fixed temporarily into position so the corresponding angles can be marked direct on to the horizontal supports when they are laid in place. In this way any slight differences and inconsistencies, which so often occur when working with odd pieces of reclaimed wood, will be automatically adjusted.

Sides Assembly

When the measuring has been completed, the seat can be knocked free of the legs and one side of the hinges unscrewed. The four sets of side supports should be assembled as separate units. Joints may be tenon and mortise, dowels, or halved joints, according to preference or ability.

If tenons or halved joints are decided upon, due allowance must be made during measuring for the necessary addition to the length of the various members. Dowel joints are recommended as being the most simple, and they are the type of joint most widely used by standard chair manufacturers. Details of the joining is shown in Fig. 4.

While the side assemblies are set aside for the glue to harden, the back

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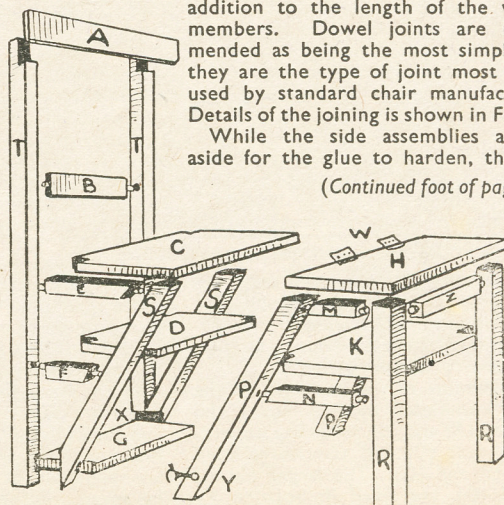


Fig. 4—A broken view showing general construction

Make for yourself this really practical LEATHER POUCH PURSE

A GOOD leather purse is a sound investment. Coins placed loose in the pocket can easily be lost. The purse described here can be made in an evening without any special tools; it is easy to open, very roomy, and will last for many years.

You will need a small amount of thin supple leather, which you can obtain from several sources. Many leather shops sell leather pieces by the pound very cheaply. A pound of these pieces would supply you with sufficient material for several purses and other articles, too.

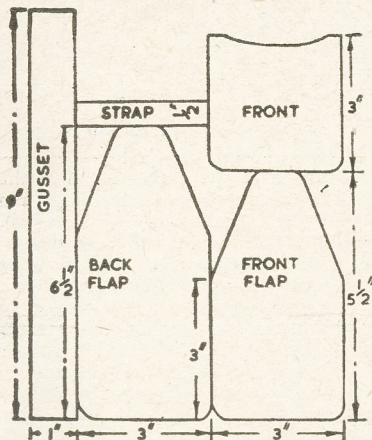


Fig. 1—Outline of shapes of parts

A discarded hand bag usually provides very suitable leather. You could, of course, buy a skin or half a skin from a leather dealer, if you have some use in mind for the remainder of the leather.

The drawing at Fig. 1 shows the measurements of the pieces required. In pencil, mark the outline of the parts on the inside (rough side) of the leather. If the material you have is crumpled, flatten it with a warm iron before marking. Cut out the pieces with a pair of scissors, a razor blade, or a sharp knife and round off the corners, where indicated, by cutting round a penny.

The Purse Portion

Next 'construct' the purse by sticking the parts together, using glue, or rubber solution. If you use glue, leave the pieces pressed together until firmly

stuck. When using rubber solution, coat each surface separately and allow to dry. Then press the two surfaces together and they will adhere. When applying the adhesive, coat only the extreme edges of the parts to be joined. Always apply glue very thinly.

First of all stick the front to the front flap. Note that the inside of the leather of each piece should come face to face. Then stick on the strap about 1 in. from the top of the front.

Fixing the Gusset

Fix the gusset on next. Coat one long edge with glue or solution, applied on the rough side of the leather. As the gusset will have to be stuck on to the shiny side of the leather of the front flap, roughen the edge of the latter to make sure they stick firmly.

Stick one end of the gusset to the front flap, exactly on a level with the front piece. Then work round the purse. You will have a bit of gusset 'to spare' but this can be trimmed afterwards.

By now you will have the front flap, front, strap and gusset complete. The only remaining part of the purse to fix on is the back flap. Do not put this on until you have stitched up the front parts. Although we say stitched, you may prefer to thong your purse. You could, of course, get it done with a sewing machine. By far the best method is to make a professional job of it and stitch it with thread. It is very easy to do, and the stitching will last as long as the purse.

With Two Needles

For this you need two needles and about 4 ft. of thread. Ordinary strong cotton would do, but thick button thread, or cobbler's thread makes a stronger purse.

Make a series of holes around the three sides of the front which you have glued, about 3/16 in. from the outside edge, and the same distance between each hole. Use an awl, or the point of a pair of compasses. During this operation place an odd piece of wood underneath, or the dining room table may suffer.

Next, thread your needles, so you have a piece of thread with a needle at each end. Push one needle through the top hole and pull until there is an equal amount of thread on each side of the

hole (see Fig. 2).

Then push one needle through the next lowest hole, and follow by pushing the other needle through the same hole. Pull tight and continue this process until you reach the third hole from the other end. Finish off by using only one of the needles, as seen in Fig. 3. The reason for this is to prevent the knot from causing weakness at the mouth of the purse.

Tie the two ends of the thread together, using a double knot. If you use your ingenuity you can arrange that the knot is hidden, by separating the layers of leather, and tucking the knot inside.

Back Flap

Now stick on the final part—the back flap. You should do this carefully, or the purse will look lop-sided. To make sure

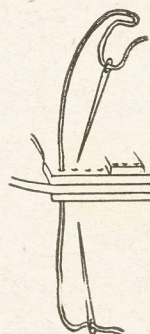


Fig. 2—Sewing with two needles

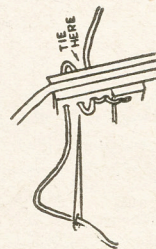


Fig. 3—Finishing threads

of a perfect fit, draw a pencil line right across the back flap, exactly 3 ins. from the bottom. Make the top edges of the gusset (trimmed to size) meet this line.

Stick the inside edge of the gusset to the inside of the flap. Then stitch up in exactly the same manner as for the front part. You will notice that the edges of the leather, where it has been cut, are whitish in colour. Make these edges the same shade as the purse by wetting a piece of waste leather and rubbing it over them. Some of the dye will come out on to the white surfaces.

Your purse is now ready for filling with money! Use the front compartment for notes (if any), stamps, bus tickets and so on; the main pocket for coins.

Step-ladder Chair—(Continued from page 403)

rests (A) and (B), together with the front rail (Z), can be prepared. The 'shelves' (D, K, and G) should be squared-up and the corners taken out to fit their corresponding support sections.

The assembly of the back half of the chair is completed by first fitting the back rests (A) and (B), following up with the half seat (C) and the lower shelf pieces (D) and (G). The larger pieces, (C) and (D), are fixed in position by either nailing or screwing them to their

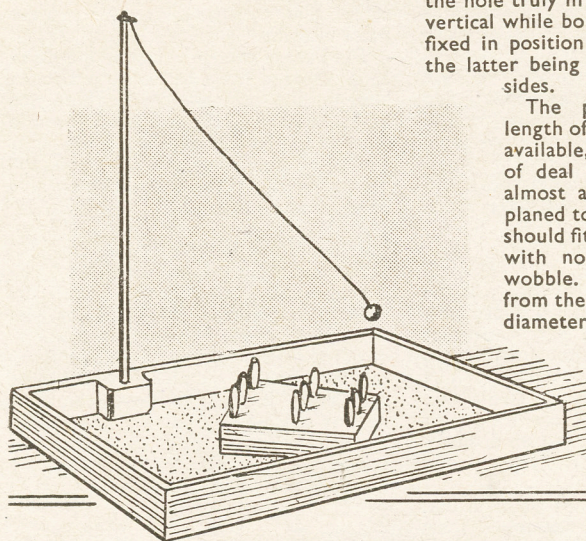
respective supports, but the narrow piece is finished to fit into grooves 1/2 in. deep cut on the inside of the assembly, so that it is 3 ins. from the floor when the chair is standing. (Fig. 4, X).

In the front half, the front rail (Z) is fitted first, after which the half-seat (H) and shelf piece (K) are screwed or nailed into position. The two completed units are then brought together and joined up by means of the two hinges (W). A small box hook (Y) is fitted across the

join of the diagonal supports (S) and (P) to keep the hinged units together.

The chair is now complete as it appears in Fig. 1. By simply disengaging the box hook and bringing the back of the chair over on its hinges, the chair is changed immediately into the step-ladder shown in Fig. 2. There is no need for any of the family to continue the dangerous practice of 'standing on a chair', for the step-ladder is always available whenever it is needed.

There is always fun and games if you make a set of TABLE SKITTLES



THIS is a most interesting table game, both for the home and clubs. It is not difficult to make and well worth the little trouble involved for the pleasure afforded. All measurements conform to the rules laid down by the Leagues, so readers can practise at home and gain some additional skill for competitions, where such are held.

The table, Fig. 1, is made to dimensions given from $\frac{1}{2}$ in. thick wood. The frame can be just butt jointed at the corners, or tongued and slotted if a more professional method is preferred. The bottom can be of stout plywood or any such wood available. It is glued and nailed on.

The Pole Block

To the left hand side, at about 7 ins. from the front inside surface, the pole is to be fitted. A wood block is provided to hold this in a vertical position, as seen at Fig. 2. The block can be 2 ins. long, $1\frac{1}{2}$ ins. wide, and, say, $2\frac{1}{2}$ ins. high. In the centre of the block a hole $\frac{3}{8}$ in. diameter is bored right through for the pole.

As this hole must be truly vertical, it will be best to bore it from both top and bottom, half-way through each time. Take some care to mark the centres for

the hole truly in line, and hold the drill vertical while boring. The block can be fixed in position with glue and screws, the latter being driven in through the sides.

The pole is, preferably, a length of ash, but if that is not available, a straight grained strip of deal $\frac{3}{4}$ in. square will serve almost as well. It should be planed to a round section and should fit the block quite snugly, with no tendency to shift or wobble. It is then tapered from the block upwards to $\frac{1}{2}$ in. diameter at the top.

A swivelling arrangement for the ball is to be fitted. In the professional article this is usually a ball-bearing fitting, but one quite effective for our purpose can be made in the following more simple way. From a piece of stout sheet brass $\frac{1}{2}$ in. wide cut a strip to shape at (C). In this bore a small hole near one end for the string, holding the ball, and another, $\frac{3}{8}$ in. from the opposite end to fit on the post.

Now provide a $\frac{5}{8}$ in. disc of thin metal, drill a hole in the centre of this, then 'dish' it to a curve, as in detail (B). The dishing here is rather exaggerated, but will show what is meant. If the disc is placed on a piece of hardwood and given a few blows with the rounded end of a ball pane hammer, it will be dished quite enough for the purpose. In the absence of a ball pane hammer, any piece of metal with a rounded end would serve for the job.

Metal Fittings

For metal fitment to spin on, a suitably sized round-headed brass screw will do for a pivot. The whole arrangement is shown at (A). First place the dished disc on the top of the pole, on to this drop piece (C). Place a thin brass washer under the head of the screw, and push the latter through (C) and (B), then drive it into the pole. See the swivelling fitment (C) is loose enough to swing round at a touch of the finger.

The ball is a wooden one $1\frac{1}{2}$ ins. diameter, provided with a tiny screw-eye to which the string can be knotted. Whipcord would do for a string, and this should be neatly tied to the ball.

The skittles will stand on a block. This is generally a solid piece of wood, cut to the dimensions given at Fig. 3. If a piece of hardwood of this thickness is not easily obtainable, make up a box, as in the sectional view, of the given size, and fill it with dry sand to add some weight to it and prevent it easily shifting as the skittles are knocked off it.

The top and sides of the box should not be less than $\frac{1}{2}$ in. thick; the bottom can be thinner, and should be nailed and glued on after the box has been filled up with the sand.

Skittles Position

The position for the skittles can be marked by small brass-headed nails driven in at the spots shown, one at the centre of the block and the other at 1 in. in from the edges. Mark them accurately in pencil first before driving in the nails. Those very small cup-headed brass chair nails would do nicely.

For the skittles, plane some pieces of hard wood to $1\frac{1}{2}$ ins. diameter and cut into $3\frac{1}{2}$ in. lengths, nine being required. It is really essential to use a hardwood for these as they have to endure a lot of knocking about, naturally.

The bottom ends should be quite flat, even a little concave would be better, to stand well, and in the centres of the bottoms, a small depression is worked to clear the nail heads they will stand over. These depressions can be easily worked with a countersinking tool. Taper the skittles from the middle to $\frac{3}{4}$ in. at the bottom and $\frac{5}{8}$ in. at the top, or thereabouts.

Now thread the cord of the ball through the swivel (C) and adjust the length of it so that the ball strikes the skittles about midway, and not the block. The skittles can be given a coat of polish or varnish, and the block and tray be stained and polished, as well. The name of a firm supplying ready-made skittles is obtainable from The Editor.

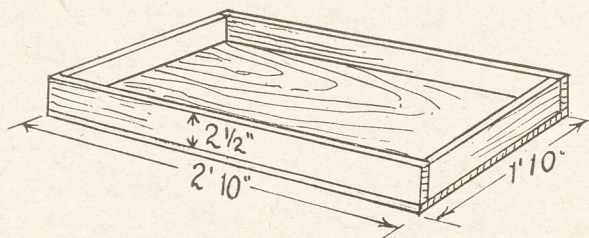


Fig. 1—Dimensions and construction of base box

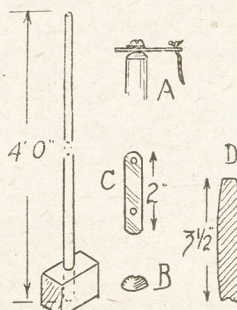


Fig. 2—Pole and parts

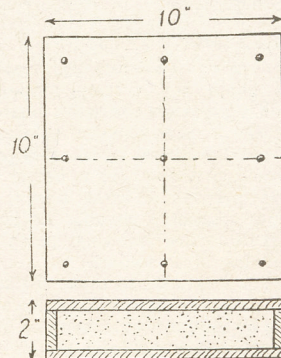


Fig. 3—Plan and section of skittle base

Here are full directions about the art of SILVER SOLDERING

ALMOST anyone can do the simple job of soft soldering with comparative ease, but they seem to fight shy of tackling the art of silver or hard soldering and brazing. This is rather a pity as there are so many small jobs that would be so much better and stronger if silver soldered instead of being soft soldered.

It is not at all a difficult art to acquire and is well worth the short time needed to learn to do it successfully. To the jeweller or silversmith it is of vital importance to be able to do silver soldering with ease, and any handyman could earn a nice little income by doing it.

The Principal Needs

No special workshop is needed and an ordinary table may be used to do small jobs on, although access to a gas point is a great asset for larger jobs. The tools and materials are simple and the few you will want can be bought quite cheaply.

If you propose using a table it would be a good idea to have a piece of board to work on unless you have an old table which you can use specially for the job. A piece of ply about 24ins. to 30ins. long and about 18ins. wide will do nicely.

The source of heat to start with can be a simple spirit lamp shown in Fig. 1 burning methylated spirit, and which gives quite a hot flame and much useful work can be done with it, in fact, many jobbing jewellers seldom use anything else.

Heating

A considerable amount of heat is required, a lot more in fact than is needed for soft soldering, so in order to increase the heat of the spirit lamp, which would not be sufficient if used alone, a blowpipe is needed. A mouth blowpipe of brass, Fig. 2, about 9ins. long can be bought from an ironmonger or craft shop very reasonably. A block of charcoal or pumice stone about 4ins. to 6ins. square and an inch or two deep to hold the work on and also to help build up the heat is another cheap item to buy.

The Solder

A pair of tweezers and a pair or two of pliers and cutting nippers should find a place on the work board. Silver solder is made in small thin sheets and is obtained from an ironmonger or you would probably get a better selection and perhaps a little advice about it from a jobbing jeweller or silversmith. Ask for low melting point or easy running silver solder.

The flux used to make the solder run in properly is ordinary borax, which can be used either in lump or in powder. If you use lump, and this is the usual method, you will want a piece of slate

about 3ins. square to mix it on. This completes the list of essential apparatus needed for silver soldering and we are therefore ready to try our first job.

Let us suppose that we are making a chain from silver jump rings as mentioned in the recent article on Jewellery and in order to make it stronger we are going to solder all the joins in the rings. Silver is the easiest metal to work and solder, so we should not have much trouble with the job.

Cleanliness Important

The first thing to do is to see that the parts which require soldering are perfectly clean. This is a very important point and much of the success of the job will depend upon it being carefully carried out. A few small needle files of various shapes are very handy for cleaning up small parts, but an ordinary pocket knife will probably be found the most useful.

When you have cleaned all parts that are to be soldered do not touch them with your hands as the natural grease from your skin is quite sufficient to stop the solder from running where it is wanted. You should get into the habit of picking up all small parts with a pair of tweezers. You may find it a bit tricky at first, but after a while it will come as second nature to you.

Preparing the Flux

Next prepare the flux by placing a lump of borax on to the slate, add a drop or two of water and rub the lump round until you have a thin creamy solution. Break off a few pieces of solder with the pliers about $\frac{1}{16}$ in. square and place in the flux.

Put a dab of flux on the join of the jump ring, and then with a knife open the ring slightly and place a piece of solder between as shown in Fig. 3. It would be as well now to stress a very important point—all joints that are to be hard soldered should fit as tight as it is possible to make them, for the solder will run into a crack however small, when the job is properly heated. By this method you get a much stronger joint than if you had left an open air gap between the ends.

Now place the ring on the charcoal or pumice stone block and with the blowpipe direct the flame of the lamp on to the ring, see Fig. 4. Blow gently at first and gradually heat up the job,

increasing the blowing and heat until the solder runs into the join, when you can cease blowing.

The heat of the flame can be increased by blowing a little harder and also by altering the position of the blowpipe in the flame. The position shown in Fig. 4 is the hottest part of a spirit lamp, and by raising the blowpipe you will be using a cooler part, which you need for small jobs.

How to Use a Blowpipe

To use a blowpipe successfully you should learn to control the breath and blow in long steady blasts and not with short jerky ones. Remember never to direct the flame on to the solder until the surrounding metal has been heated sufficiently—until it is nearly the same heat as the melting point of the solder. It is very interesting to watch the progress of the job.

Apply the flame successively to both

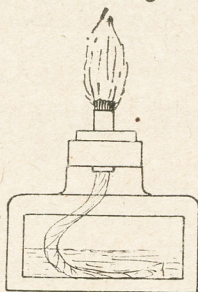


Fig. 1—Section of lamp

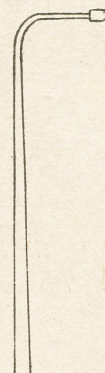


Fig. 2—The pipe

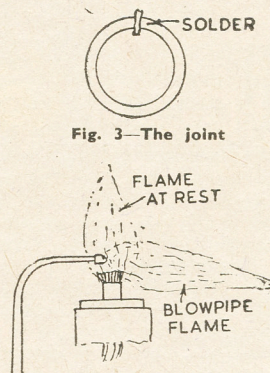


Fig. 4—Use of blow pipe

sides of the join. By gradually increasing the heat, the job and solder will become red hot. Then a little more heat, and white heat is nearly approached. Now at this point the solder will suddenly disappear—it has in fact run into the joint and you will know that you have made a satisfactory and strong job.

It is indeed quite a thrill when the solder takes on a somewhat luminous appearance and then vanishes. While the article is still hot it should be dropped into a pickle made of 1 part of sulphuric acid in about 10 or 12 parts of water (Remember when mixing this solution to pour the acid slowly into the water and never the reverse way).

This pickle helps to remove the hard scale which forms during soldering and very much eases the process of cleaning up the join, and it also greatly improves the colour of the metal. It is only necessary to leave the job in pickle for a minute or two, afterwards rinsing in clean water and drying.

(Continued foot of page 408)

Just the thing for a young man to make—a BEDSIDE CLOTHES STAND

THE question of where to put one's clothes at bedtime is generally quite a problem. Very often they get thrown over a chair or even on to the bottom of the bed. This is really very untidy and unhygienic. Clothes have more often than not absorbed a certain amount of perspiration during the day, and if they are hung properly when you take them off they will have aired and be fresh to put on in the morning.

The bedside stand described here was devised by the writer and has been very efficient in carrying out all these requirements. There is a shaped hanger at the back for coat and waistcoat, while underneath the top of the stand are two bars.

The back one is a fixture for hanging your trousers on, but the front one, which is for your shirt, is hinged and

and cut to form the shape shown in Fig. 3. It is cut this shape to allow the coat to drape over the hanger correctly. $\frac{1}{2}$ in. wood is also suitable for the two sides, although you may use it a little thicker if you prefer the job to be stronger.

You will see from Fig. 2 that the narrow ends of the side pieces are cut 6 ins. wide to fit the top of the stand, while the base is increased to 9 ins. to enable it to stand firmly. The length of these pieces is 32 ins.

Extra strength can be given in fastening the top and sides together by crossbars 6 ins. long and $1\frac{1}{2}$ ins. wide glued along the top edges. The top is glued down on to these and secured with small panel pins.

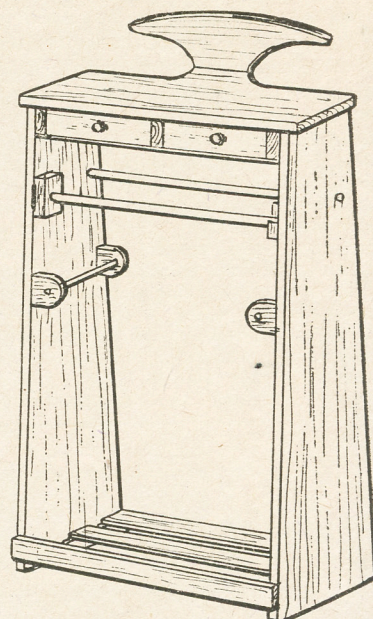
Shoe Rack

It would be as well to fit the rack for the shoes next—this will help to hold the framework together. It will be seen from Fig. 2 that the rack slopes upwards towards the back to allow the air to circulate round the shoes better. If you had got them wet they will then have a better chance to dry out during the night.

Two pieces of $\frac{1}{2}$ in. wood 9 ins. long, 2 ins. wide at one end and 1 in. at the other are glued to the base of the side boards, and the three slats are fastened on to them. Make them 19 ins. long, 2 ins. wide and $\frac{1}{2}$ in. thick, which will leave $1\frac{1}{2}$ ins. air space between them.

Another strip 20 ins. long and about 2 ins. wide is fastened right along the front to keep the shoes from slipping off and also to make the job look more tidy. The coat hanger part would be better made of $\frac{3}{4}$ in. wood 16 ins. long and 5 ins. wide and cut similar to the pattern shown in Fig. 1. The shape of the curves is not important, although the top should not be cut too sharp or the coat may slip off.

Extra strength will be needed with this piece, and it can be obtained by the aid of a supporting bar, which not only holds the hanger firm but keeps the top board flat and also acts as a partition to the two drawers. A piece 9 ins. long,



$1\frac{1}{2}$ ins. wide and 1 in. thick will do nicely. By fixing a piece of thin ply to the three bars on the underside of the top board you have the foundation for the drawers and can get them made and fitted.

Hardly any description is necessary for this drawer which is a fairly easy job—just a piece of thin ply for the bottoms and with the sides and ends glued on to them. If you are good at dovetailing you may like to use that method. The drawers can be any depth up to 6 ins. Two knobs and, of course, the necessary stops at the back will complete the job.

Cross Bars

We are now ready to fix the various bars. The two top ones can be made of $\frac{3}{4}$ in. dowel rod; the back one, which is a fixture, about 1 in. from the back and 3 ins. down from the bottom of the drawers. Drill holes right through the sides and glue in position. The front bar is fixed into a small block of wood 3 ins. long, 2 ins. wide and 1 in. thick. This is hinged to the side of the stand, as shown in Fig. 4. The free end of this fits into a kind of latch fixed on to the opposite side of the stand; the shape and size will best be seen by referring to Fig. 5.

The small bars fitted to either side are glued into blocks of wood as shown in Fig. 6.

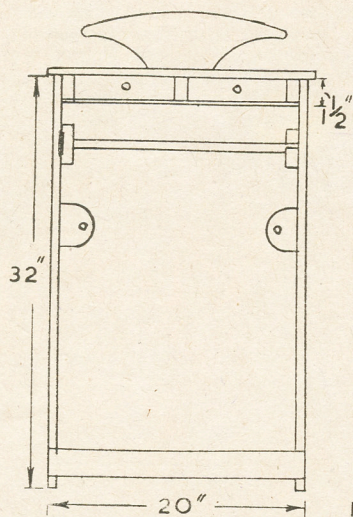


Fig. 1—Front view showing parts

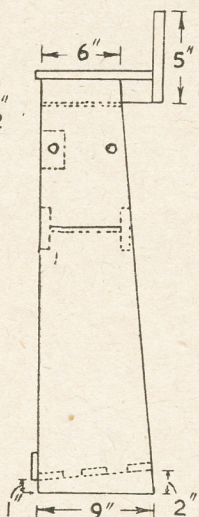


Fig. 2—Side view

will swing out so you can get at the back bar easily. Along either side is a short bar for collar, tie and socks, whilst room is made for shoes on the rack at the base.

There is plenty of room on the top of the stand for a bedside lamp and a book or two, and underneath two shallow drawers will hold any odds and ends such as collar studs and tie pins.

The Wood

The most suitable wood is a hardwood such as oak, walnut, ash or mahogany, but if this is difficult to obtain, any other kind of wood may be used and stained to suit. It would be nice, however, to make it to match the other furniture in the bedroom, but that is a matter which you must decide yourself.

For the top a piece of wood 21 ins. long, 9 ins. wide and $\frac{1}{2}$ in. thick is suitable. Or you may glue two pieces together

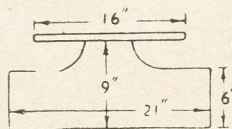


Fig. 3—Fancy top

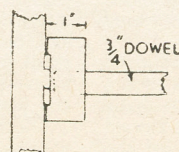


Fig. 4—Hinged dowel



Fig. 5—Dowel holder

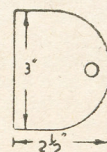


Fig. 6—Bar support

Temperature can be correct and maintained with an electric PHOTOGRAPHIC WARMER

AMATEUR photographers who do their own film and print processing are well aware of the importance of correct developer temperature. Cold developers are extremely sluggish and unreliable in action. This is particularly so in the case of gaslight paper, where slow development produces flat, lifeless prints. The fixing bath must also be at the correct working temperature, otherwise the fixing may be unduly prolonged and adversely affect the permanence of the finished film or print.

The correct working temperature of developer and fixing is approximately 65 degrees F. and this can be efficiently maintained with the electric dish-warmer as illustrated in Fig. 1. Fig. 2 clearly indicates the constructional

A small hole is next drilled in the centre of the lower half of the tin, which is then temporarily screwed into position midway on the side of the dish-warmer. The tin is then turned until the hole in same is in the lower position. A $\frac{1}{2}$ in. diameter hole is then drilled through the side, concentric with that of the tin. The lid is then replaced on the lower half of the tin to complete the heat control unit.

To obtain the maximum heating value, the unit is turned until the hole in the side is closed. Between the closed and fully open positions, one can adjust the unit to obtain the correct working temperature.

Two suitable electric bulb holders are next screwed into position, (Fig. 2C) and are wired together in parallel. If possible, asbestos-covered insulated wire should be used, to preclude the possibility of damage to the insulation from the heat of the lamps. The

design can of course be simplified by using one holder and bulb, the bulb being of course equal to the combined wattage of both the smaller bulbs. The heat however, is concentrated in only one part, whereas with the employment of two bulbs, the heat is much more diffused.

A 5 amp. plug holder is next wired up to one of the bulb holders and screwed into position, Fig. 2 (D). Two 25-watt electric bulbs, see Fig. 2 (E) are next installed and the heating plate, Fig. 2 (F), screwed into position with small brass screws. The heating plate can be made from either brass, copper or stainless steel, 14ins. by 8ins. by $\frac{1}{16}$ in. Do not, however, use aluminium for this purpose, as any spilt developer, being strongly alkali, will immediately attack and corrode the metal.

A connecting plug is wired up with a suitable length of flex and the dish-warmer is completed. It is not advisable to paint the dish warmer, as when in use the paint is apt to soften with the

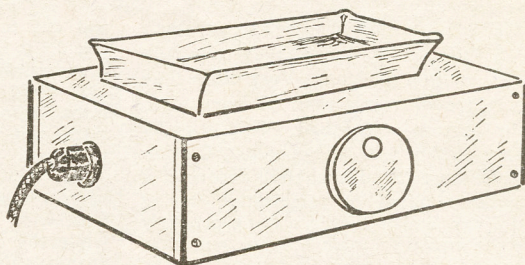


Fig. 1—Complete unit in use

warmth and give an objectional odour. If it is smoothly glasspapered, the appearance is quite pleasing and is quite easily cleaned when required.

How to Operate

To operate the dish-warmer, the dish of developer is placed on the heating plate, the connecting plug inserted and the heat control unit fully closed. After two or three minutes, the developer is tested with the thermometer and when at 65 degrees F. the heat control unit is partly opened and adjusted until the developer temperature remains constant.

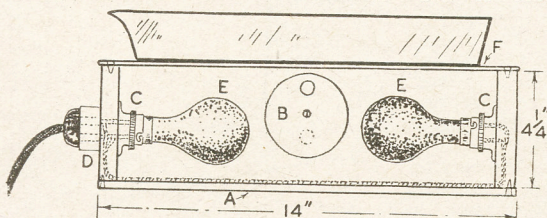


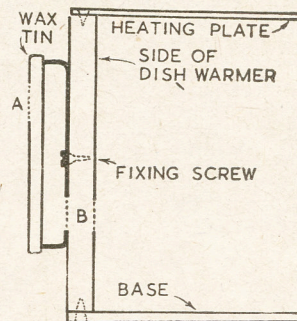
Fig. 2—Section showing lamps in place

features of the dish-warmer. The overall dimensions are 14ins. long by 8ins. wide by $4\frac{1}{2}$ ins. deep, which will be adequate for all normal requirements.

To construct the sides of the warmer, two lengths of $\frac{1}{2}$ in. thickness wood, 14ins. by $4\frac{1}{2}$ ins. are butt joined with brass screws to the two end pieces. The dimensions of the end pieces are 7 ins by $4\frac{1}{2}$ ins. by $\frac{1}{2}$ in. thick. A smooth piece of wood, 14ins. by 8ins. by $\frac{1}{2}$ in. thick is next required for the base (A). This is screwed into position with small brass screws.

Control Unit

The heat control unit (B) is constructed from a discarded wax or shoe-polish tin. Fig. 3 clearly indicates the constructional features. Two $\frac{1}{2}$ in. diameter holes are drilled in the tin, one in the lid near the edge, the other, diametrically opposed, in the tin bottom. The relative positions of the holes are shown in Fig. 3 (A & B).



Section showing the heat control

It must not be overlooked however, that during developing and printing a slight heat loss occurs through the contact of the cold film and paper with the developer. This should be compensated by very slightly closing the heat control unit, with an occasional re-check with the thermometer. This can be done without any trouble.

Soldering—(Continued from page 406)

Let us try now a rather more difficult task and solder up a seam in a piece of sheet metal. It would be good practice to make a silver ferrule to put on a walking stick. Cut a piece of silver, which is obtainable from a silversmith, about $\frac{1}{16}$ in. wide and long enough to go round the stick.

Place a piece of paper round and make a pattern first. File the two ends square and perfectly level and curl up to shape on a piece of round wood. You should use a piece of wood smaller than the finished article is to be, so that the two

ends overlap slightly. It will then be possible to snap the ends together and get a perfect fit with no air gaps.

A piece of thin iron wire can be put round and twisted up to keep the ends together when heat is applied. Scoop out a little sink in the charcoal block and put the ferrule here, then run a small quantity of flux on the join. Cut a few snips of silver solder, flux these and place about three along the join.

The heat of the blowpipe flame must now be applied very gently, first to dry the water out of the flux, then more

heat to either side of the join. Be careful not to heat the solder yet or it may form a ball and roll off—that is why this job is more difficult than the last. If you are careful to heat the silver gradually to red and then a little more, the solder will flow into the crack quite easily. Do not go beyond this heat or the actual metal may melt.

Place in pickle and clean as before. The finishing and polishing is quite an art in itself and must be dealt with in another article.

You can make lots of practical novelties by undertaking TREE-TRUNK CARPENTRY

THERE is a tremendous lot of pleasure to be had from making furniture and gadgets from timber in its natural state. Tree trunk carpentry, as it is called, is an art that does not appear to be so popular as it deserves. It is possible to make some really useful and artistic articles from odd logs and branches of trees.

The work is not at all difficult and there is great scope for the handyman who will experiment and devise new designs. Much of the wood can be obtained from a timber merchant in the form of surplus offcuts, a bag of fire logs

Cut the three legs from dowel rod or a piece of broom handle about 1in. diameter and taper one end slightly. Drill holes three quarters of the way through the top so the legs are a tight fit, and tap home, applying a spot of glue if thought necessary.

The legs can be made to fit at right angles to the top, but they are much safer and also look better if they are splayed just a little. If the stool is for use in the garden the bark can be left on, but for indoor use it would be better to peel off the bark, glasspaper smooth and polish.

Table Mats

Table mats can be easily made, but they should not be cut too thick or they will look rather clumsy. Special care will be needed in cutting thin slices, and here a well oiled sharp saw will make the job comparatively easy. For the round mats a good size is about 6ins. Quite novel oval mats can be made by cutting the wood at an angle of about 45 degrees.

Teapot and flowerpot stands are just variations of the table mats made to other sizes. They can be left quite plain or variety can be given by fitting feet of different patterns.

The ash tray shown at (B) is a very useful article to make, and gives good practice in the use of a gouge. About 4ins. diameter and $\frac{3}{4}$ in. to 1in. thick is about right. As the wood is end grain the job will be a little more difficult and the best plan is to drill a number of holes and then cut out the surplus wood with a gouge.

A pin tray is made on similar lines to the ash tray, but is a little smaller and has not got the grooves cut in the

rim. It does not matter what wood is used for these two trays, although a hardwood is to be preferred.

A Child's Chair

The 'easy' chair illustrated at (C) is a more difficult job to tackle; not so much in the skill needed but rather as a test of patience. It is, however, well worth the time spent in the making and it is really surprising how comfortable a chair of this type can be. It is an ideal chair for summer days in the garden, and one or two on the lawn are quite attractive. Children are delighted with the miniature ones made specially for them, and will spend many happy hours in them.

A timber merchant will be able to supply a log for the job—probably an odd end of a trunk unsuitable for

cutting up into planks. It does not matter if it is a hardwood or a softwood—the difference will be in the time taken to cut out the wood, so, perhaps, a softwood would be best to start with.

A log 15ins. to 18ins. diameter and about 30ins. long will do for an ordinary size chair, while for a child's chair 12ins. diameter and 21ins. long will be ample. Commence by cutting out a quarter of the log, thus making it the shape of an 'L'. Do this by making a saw cut down through the centre, to be met by another cut halfway through the side of the log.

The Back

Next, the upper half of the log, which will form the curved back must be cut out with a chisel and mallet. A lot of time can be saved by drilling a number of holes with the largest bit you have and as close together as you can get them, and then chipping out with the chisel.

The seat can be left perfectly flat as in the illustration, or it might be thought more comfortable if made slightly curved. Do not cut the back out too thin, the actual thickness will depend somewhat on the kind and condition of the bark. Cut the wood as smooth as you can and give a final finish with glasspaper.

Quaint Candlesticks

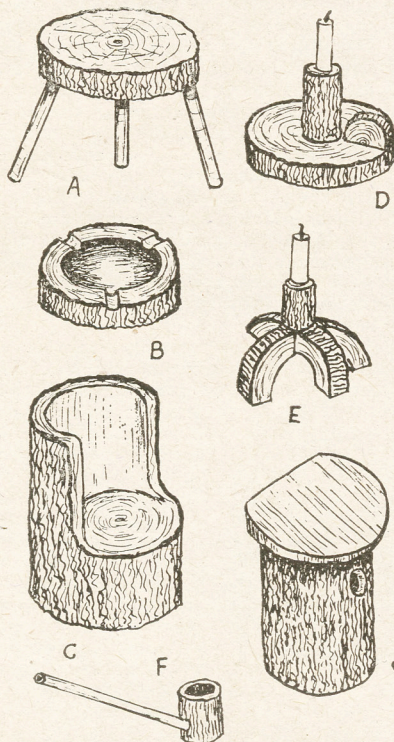
The candlesticks illustrated at (D) and (E) are always useful articles to make, and quite easy too. The first one has a slice of about 4ins. diameter and about 1in. thick for its base and a piece of small branch for the stem. This can be any length to suit your fancy, and is either screwed on through the base or a hole can be drilled and the stem made a tight fit. A half circle of a small branch is fitted on the side to act as a handle.

The candlestick (E) is a little more tricky to make. Cut a slice about 1in. thick from a 4ins. to 6ins. diameter log, and cut this in half. Then cut out a semicircular piece from each, leaving the wood about 1in. wide. Join the two at the centre by cutting a slot half way through each—one from the top and the other underneath. The stem is screwed on from underneath, thus holding the two base pieces together tightly. The hole for the candle is bored out with a twist drill of the correct size.

Clock Cases

Clock cases made from small pieces of tree trunk can be very attractive and are easy to make. The one illustrated at (H) is for a small 2½in. drum timepiece—the type that can be pushed in a hole from the front and secured at the back with two or three nuts.

Choose a piece of wood that will leave a margin of about 1in. round the clock, and slightly flatten the bottom. The semicircular base also has a flattened part



might even yield a few useful specimens; while a visit to the countryside should produce sufficient stock for all ordinary purposes.

The bark may be left on for some articles, or it may be stripped off and the wood polished, stained or varnished. The type of tree and the condition of the bark will generally determine this factor—some logs with a smooth solid bark look quite attractive left in the natural state.

Small Stool

The stool illustrated at (A) is quite an easy piece to start with and can be made from a 2in. slice off an oak, elm or beech tree. A piece 12ins. diameter is a suitable size, although if you intend to make a stool for children 9ins. would be ample. The thickness can be reduced to 1½ins.

(Continued on page 410)

Modern chairs can be obtained from old style by this CHAIR CONVERSION

DURING the immediate post-war period it was 'quite the thing' to furnish with second-hand articles, but now the situation has changed and second-hand furniture is no longer as fashionable as it was. Fortunately, most old pieces can be reconstructed to give them a more modern appearance at very little cost.

The Victorian high-back armchair pictured in the drawing is a good example of a suitable subject for simple reconstruction. Only two saw-cuts, and the addition of false seat-boards are necessary to completely change the style of this piece. Careful home-upholstering completes the transformation from the Victorian piece to a modern armchair of comfort and charm.

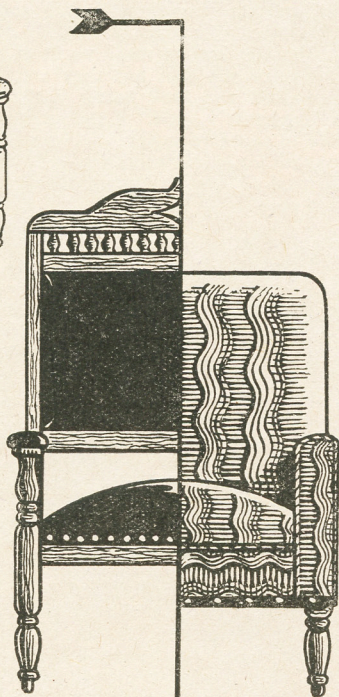
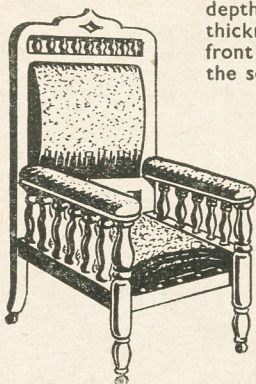
Upholstery

The first step in reconstruction is to check carefully the existing upholstery, replacing any stretched or rotten webbing, seating, all springs firmly, and patching any torn fabric. All joints should be examined, and any weak parts of the framework strengthened.

Removal of the decorated top is the next job. Most chairs of this type have a wooden frame inside the upholstered back, and before removing the top (by sawing through both sides), the outer frame should be screwed to the inner frame. This should make the back of the chair firm. If there is any looseness a piece of wood may be fitted across the top of the chair back, but the back should not be given any extra height if it can be avoided.

The next step in the process of reconstruction is to fit the false boards to give the seat an appearance of greater

depth. Boards of suitable width and thickness should be fitted to the back, front and both sides of the chair under the seat. Fitting the false boards com-



pletes the constructional work, and all that remains is to pad and cover the chair.

Kapok, cotton waste or any other type of filler may be used for padding. Stout hessian should be used over the padding, and a suitable fabric for the final cover, or a slip cover can be made.

Fasten a piece of hessian, with stout

tacks, inside the sides of the chair arms. Stuff padding from the outside to fill the spaces between the arm supports—using plenty of padding and distributing it evenly. Cover the outsides of the sides of the chair arms with hessian. Fill the space between the bottom of the chair back and the back of the seat in the same way, by tacking hessian each side of the aperture and firmly filling with padding. Any lumps can be smoothed out by pushing a steel knitting needle through the hessian and working it about to evenly distribute the padding.

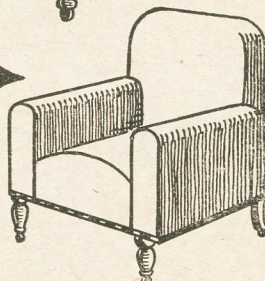
New Chairs for Old

All that remains is to pad and cover the complete chair (except the legs). The chair should be carefully padded and strong hessian stretched over all the parts; the padding should be positioned to emphasize the outlines of the new-style chair, and particular care should be taken over the arms. The sequence for padding and covering is the seat first, then the back, finishing with the sides.

After padding and covering, the legs should be cleaned off and stained, and the casters checked to ensure that they work smoothly; the chair can be made to tilt back a little by shortening the back legs.

This is a very simple example of furniture reconstruction and modernization, and many other old-fashioned articles can be given a new look if careful consideration is given to the basic lines of old and new. The expense of reconstruction is not very great compared with the value and appearance of the new pieces—and there is always the pleasure and satisfaction of a good job done well.

Like so many other things it only requires careful thought and preparation, which can be as much pleasure as the actual work involved.



Tree Trunk Carpentry—(Continued from page 409)

or the top to fit on to, which is glued and screwed down tight.

A small hollowed-out trunk is an ideal home for a bird, and a few nesting-boxes in the garden will prove a source of enjoyment to all bird lovers. For the cheeky little blue-tits the internal diameter should be 4ins. and the height about 7ins. Most of the hollowing-out will have to be done with a twist drill and chipping out with a chisel. The bottom can be made fairly level with a red-hot poker.

A sloping roof is fitted which overlaps the trunk by about 1in. The hole for the bird to enter should be near the top and

for a blue-tit has a diameter of $1\frac{1}{8}$ ins. to $1\frac{1}{2}$ ins. The best place for a nesting box is on the trunk of a large tree and where the sun does not shine direct on to the box.

A very simple hanging bird-table can be made from two circular slices of trunk held apart with three chains fixed into screw eyes. If the distance between the two is not more than 5ins. or 6ins., you will keep the larger greedy birds away.

The pipe smoker will revel in the variety of pipes that he can easily make. Cherry wood is the recognised best wood for the purpose, but experiments

can be carried out with many other kinds. No definite sizes can be given as each smoker has his own fancies, both as regards size and design. The illustration at (F) shows a favourite pattern.

Only a few of the very many articles that it is possible to make by tree trunk carpentry have been described in this article. The keen handyman will be able to devise many more to adorn the home and garden, and also to form really attractive gifts, the giving of which will afford as much pleasure as the receiving.

Keep your eyes open in the country for suitable odd pieces which may lend themselves to this type of work.

A simple to make, and convenient to carry folding LAWN OR BEACH REST

It may seem a little early yet to talk of sitting or lounging about out of doors, but if one is thinking of making or preparing chairs or tables that are to be used wholly in the open, now is the time to start work upon them. For sitting on the lawn, or indeed, on the beach come to that, a back rest such as that illustrated in Fig. 1 will be the thing.

The finish to be put upon it should be appropriate to its use, viz., a good carriage varnish which will withstand heat as well as moisture and exposure.

As Fig. 1 shows, the Rest is made to fold flat when not in use. The canvas covering and seat protection, which is all in one length as shown, can also be folded conveniently.

Ground Frame

The serviceable wood to use would be American Whitewood, beech or birch, all both close grained and hard of surface. The ground frame can first be taken in hand, and the detail Fig. 2 gives a good idea as to its form and construction. The side view, Fig. 3, of the Rest shows this frame in position with the back rest and support frame in place.

There are two long outside rails measuring 22ins. long by $1\frac{1}{2}$ ins. square, and three cross rails, each measuring $1\frac{1}{2}$ ins. square. To make a sufficiently strong job of the frames they should be mortised and tenoned together. A stub tenon can be used in all cases, or better still a through tenon, meaning, of course, that the tenon runs through the full width of the rail with the ends of the cross rails showing on the outer face of the long side rails.

The method of making the stub tenon is shown in Fig. 4, the ends of the cross rails being shouldered and with the tenon running half way through the long rails. The cross rail (A) in Fig. 2 should stand 2ins. in from the ends of the long rails, while rail (B) should be 6ins. from (A). The end rail (C) should be at least 1in. away from the rounded ends of the side rails.

Recesses into which the round rod of the support frame must rest, are made as shown in Fig. 3. Each recess is $\frac{3}{4}$ in. deep with rounded end and should be

$\frac{5}{8}$ in. wide to take $\frac{1}{2}$ in. round rod of the support frame. The end recess is $3\frac{1}{4}$ ins. from the rounded end of the side rail measured from the centre of the recess, the other two recesses are $2\frac{1}{4}$ ins. from centre to centre.

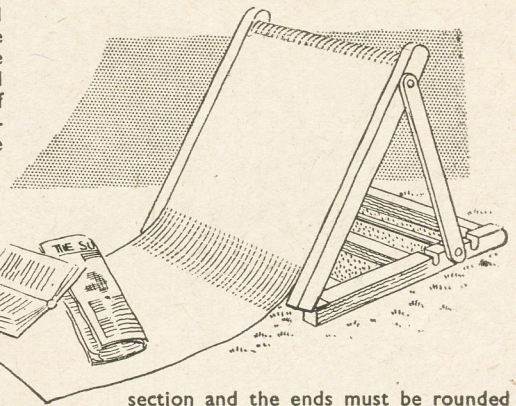
They are made by first boring holes in the centre of the depth of the rails with a $\frac{5}{8}$ in. centre bit and then cutting down from the top face of the rail until the hole is reached. This cutting should be neatly cut with a small tenon saw and cleaned out afterwards with glasspaper. Care must be taken to see the recesses in both rails are identical and exactly opposite each other.

Back Frame

The back frame to which the canvas covering is later attached, is shown in Fig. 4. This frame is exactly the same width as the ground frame, viz., 16ins. full width with a space of 13ins. in between rails. Note the positions of the three cross rails in this frame. The middle rail is $9\frac{1}{2}$ ins. up from the square ends of the side rails. The cross rails are 2ins. by $1\frac{1}{2}$ ins. in section, while the side rails are $1\frac{1}{2}$ ins. square, and all stub tenoned and mortised together just like the ground frame. Take off all sharp edges and corners of all the rails with glasspaper.

Both frames having been completed, the next job is to hinge them together. A pair of $1\frac{1}{2}$ in. brass hinges should be strongly attached to both frames in the manner shown in the side view Fig. 3. The flaps of the hinges are cut in or recessed so they lie flush with the surface of the rails.

The adjustable frame to support the back consists of two side rails and a length of $\frac{1}{2}$ in. round rod, the latter being let into the side rails to rest in the slots in the ground frame. The side rails are to be 19ins. long by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in. in



section and the ends must be rounded neatly and made smooth.

At the top end of the rails bore holes $\frac{3}{4}$ in. down to take $1\frac{1}{2}$ in. round-head screws. The screws should be free in the holes and to prevent undue friction on the rails thin washers should be included under the heads of the screws. Holes should be made in the lower ends of the side support rails with $\frac{5}{8}$ in. bit and the rod cut to length 17 $\frac{3}{4}$ ins. long. Glue the ends of the rod firmly into the rails and clean off the ends neatly with glasspaper.

A piece of ordinary deck chair canvas about 4ft. long and 13ins. wide will be needed, with about half-a-dozen large-headed tacks, those with a leather or fabric covering being best for the job. The canvas should be brought round the top rail of the sloping frame and nailed on the underside or face of this rail.

There are two or three ways of finishing the woodwork. Many will leave the wood in its natural state, others will, no doubt, prefer a good coating of varnish to preserve the wood, while others again will follow the natural craze for colour, and paint the frame some bright and attractive colouring.

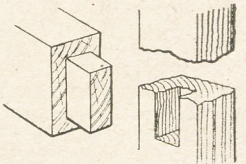


Fig. 4—The tenon joint

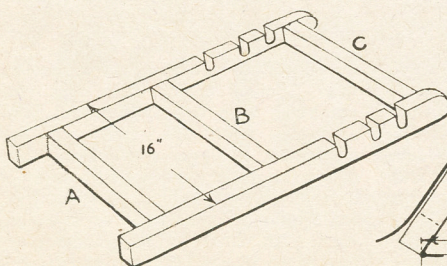


Fig. 2—The frame on the ground

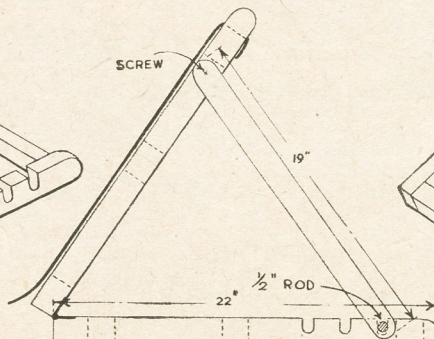


Fig. 3—Side view showing adjustable back and slots

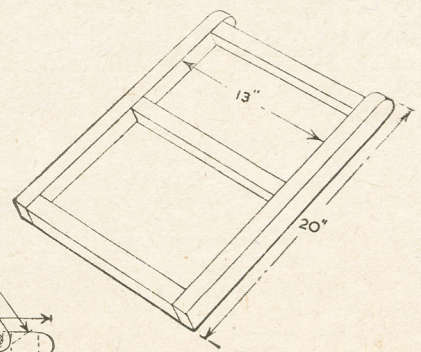
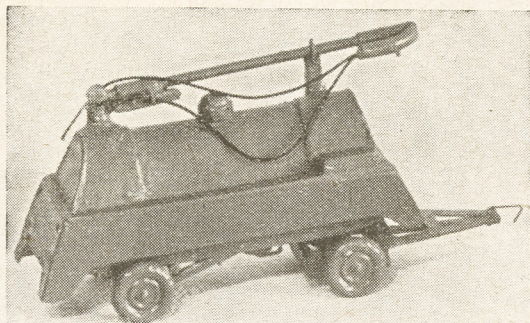


Fig. 5—The hinged movable back frame

Patterns are given on page 413 for this miniature R.A.F. MODEL OIL BOWSER



THE type shown and explained here is the general Oil Bowser used on all the large 'dromes. Note that there is not quite the stagger on the window at the front, the bonnet is more square and it has not quite the well-domed roof as in the other vehicles in this series. The full size patterns are shown on page 413.

The chassis (No. 1) construction is simple, being made from two lengths of good clean strip wood $4\frac{3}{8}$ in. long. Make these with $\frac{7}{16}$ in. by $\frac{1}{8}$ in. wood with cross struts every inch along measuring $\frac{7}{8}$ in. long. These can be of the same wood.

Note in the sketch that the sections are split up as follows—bonnet $\frac{7}{8}$ in., cab $1\frac{1}{8}$ in., tank 2in., cabinet for equipment and controls $\frac{7}{8}$ in.

Start from the front and make the bonnet from a small block of wood (No. 2). This is $\frac{7}{8}$ in. long, $\frac{3}{4}$ in. high, $\frac{7}{8}$ in. wide. It is shaped off in straight sections on the top, and the front is finished with a $\frac{1}{4}$ in. band of cardboard (No. 3). The front can be finished with a card frame, as shown, to represent the radiator which is fitted right to the front of chassis bars. A special picture is shown in (No. 4) as this vehicle has a stand-up guard rail fitted at an angle as shown. Panels for inspection of engine can be made from cardboard, and painted as shown.

The cab is next to make with the floor (No. 5) $1\frac{1}{8}$ in. deep by $1\frac{1}{8}$ in. wide at front and $1\frac{1}{4}$ in. at back; it is a little narrower in front. Now make the roof from $\frac{1}{4}$ in. wood to allow for sanding

exactly the same size (see No. 6) sloping as shown in (No. 7). The sides (No. 8) are fairly straightforward, being $1\frac{1}{8}$ in. by $1\frac{1}{4}$ in. with square windows $\frac{1}{2}$ in. by $\frac{1}{2}$ in. placed $\frac{3}{16}$ in. from the roof.

The back (No. 9) can be made from plywood and be $1\frac{1}{4}$ in. wide by $1\frac{1}{2}$ in. high so you can sand this off to come flush with the back top of roof which will slope up a little, as seen in

the sketch.

This type of vehicle has a protection between cab and container, and you can provide for this by adding another $\frac{1}{4}$ in. section under the chassis with a cut-out to fit round the main chassis (No. 10).

The front is simple being quite square with no stagger. Make it in thin plywood, size $1\frac{1}{8}$ in. by $1\frac{1}{4}$ in., and if you cut right round the window sections (No. 11) you can then replace the divisions with cardboard suitably cut. Sketch (No. 12) shows what is meant by this.

Such planning will enable you to

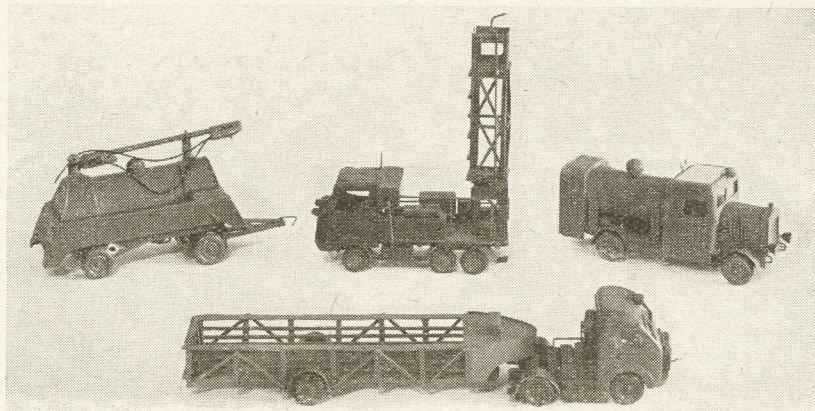
from $\frac{1}{4}$ in. wood at least. These should be $1\frac{1}{2}$ in. wide and $1\frac{1}{4}$ in. high as in sketch (No. 13). Space out to 2in. and bind round with thin card or tin. A rounded dome $\frac{1}{2}$ in. in diameter must now be fitted and this finished off with a strip of thin card $\frac{1}{8}$ in. wide to form the rim. Four bearers are wanted to hold the container shaped out as shown in (No. 14).

Control Cabinet

In (No. 15) is shown the control cabinet which fits at the back of the container. This is from plywood $1\frac{1}{2}$ in. high by $1\frac{1}{2}$ in. wide, rounded on the corners. This is then fitted with a strip of card $\frac{3}{8}$ in. wide which goes up the side, along the top and down the other side.

Make a strip of wood $1\frac{1}{2}$ in. wide and $\frac{3}{8}$ in. deep to fit in the base. Paint the inside of this white and make a panel of small wheels and pins to represent the controls. You will now require a panel as seen in (No. 16) which would be best cut out in thin plywood. Line this with thin Cellophane.

The full lay-out of all assembled parts is seen in the sketch (No. 17). Note position of wheels, mudguards and the small steps on the rear guards. A short



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The container needs two supports

running board is mounted between rear mudguard and back of cabin. Small tool-box is also carried here. Model should be painted in green or grey.

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READERS in London and Sheffield districts will be interested to hear of two Model Exhibitions which they will find worth while making every effort to attend. The Model Railway Club is holding its annual Exhibition at the Central Hall, Westminster, London, from Tuesday, April 11th until Saturday, April 15th. This year the number of models will exceed 3,000 and will include a comprehensive display of models of the former Railway Groups.

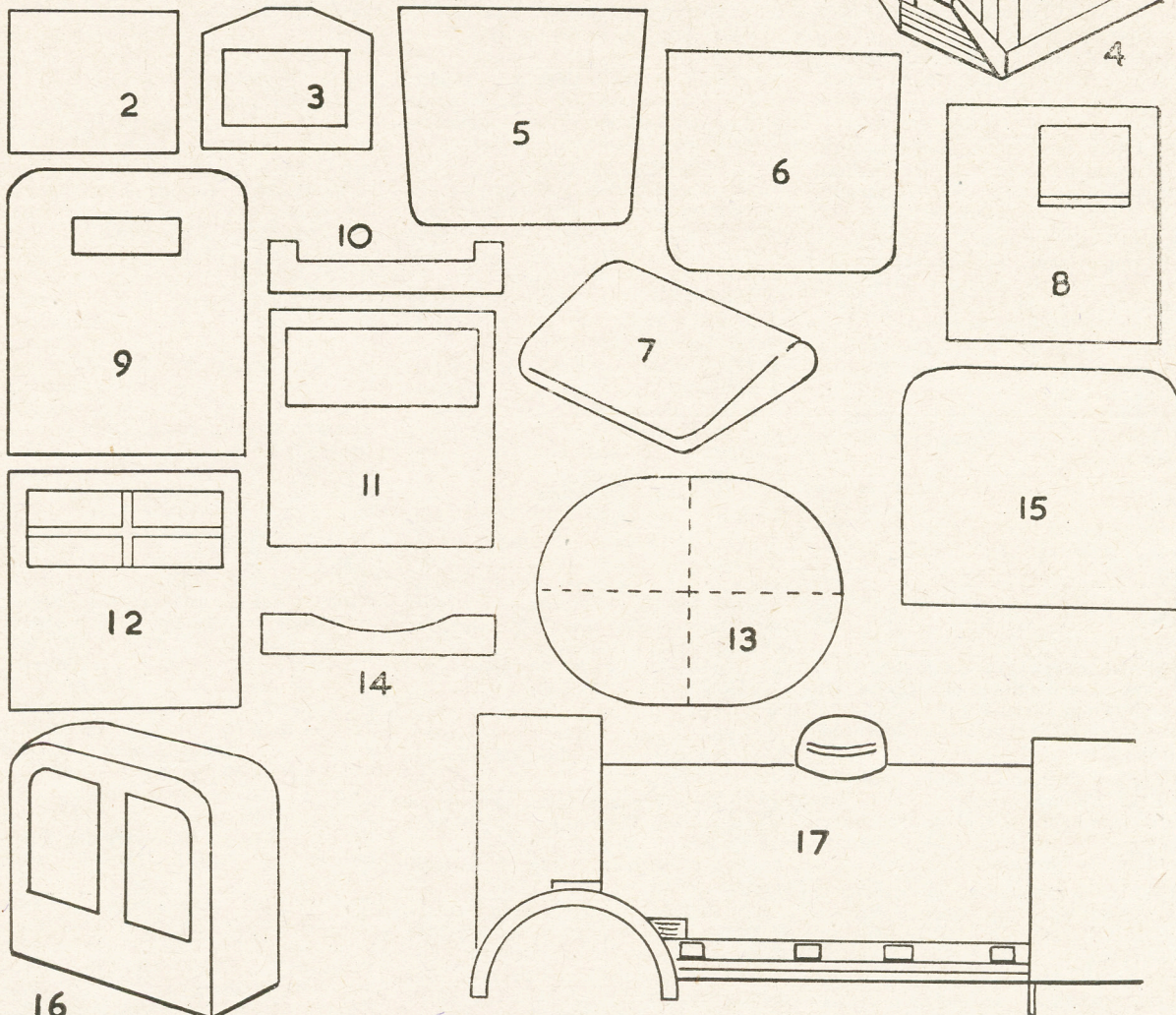
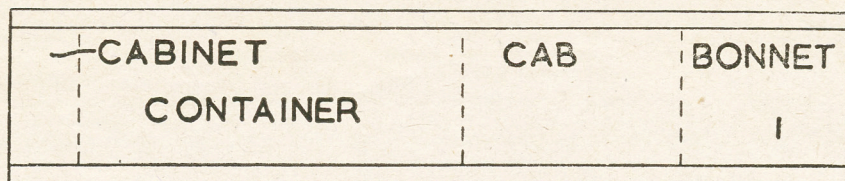
The exhibits will include models of locomotives, coaches, wagons, stations, building and line side gadgets. Other sections will show points and track lay-outs, free lance models and models under construction so that methods and craftsmanship may be studied. In addition, a large working model Railway staged by British Railways, and many other working track lay-outs of different gauges.

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Patterns for MODEL OIL BOWSER

See opposite page



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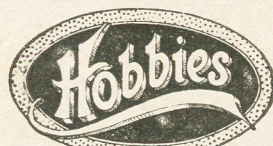
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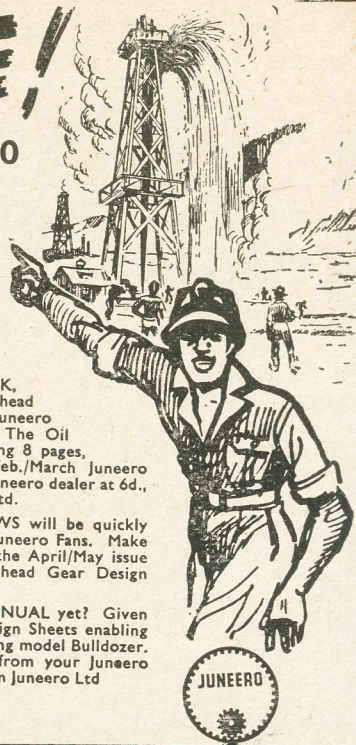
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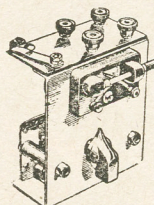


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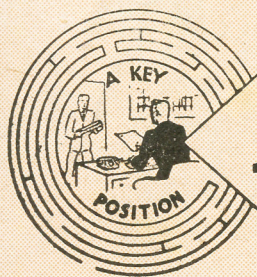
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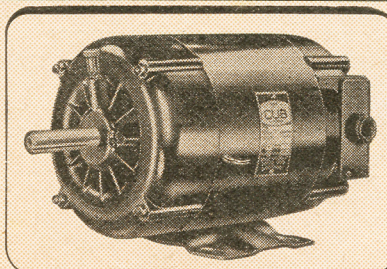
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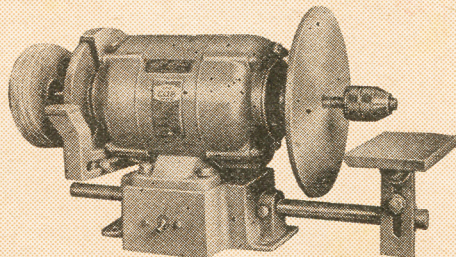


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